

## HOCKEY PLAYING TABLE

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The present invention relates to a hockey playing table, and more particularly to a hockey playing table that can achieve the effect of playing the hockey game.

#### 2. Description of the Related Art

A conventional hockey playing table in accordance with the prior art shown in Figs. 7 and 8 comprises a platform 15 having a top formed with a plurality of elongated slots 11, a ball inlet 10 mounted on a side plate of the platform 15, a ball outlet 14 mounted on the side plate of the platform 15, and a plurality of manipulation mechanisms mounted on the platform 15. Each of the manipulation mechanisms includes an operation rod 13 rotatably mounted on the platform 15, a connecting rack 19 mounted on the operation rod 13, a first bevel gear 18 secured on the operation rod 13 to rotate therewith, a rotor 16 rotatably mounted on the connecting rack 19 and movably mounted in the respective slot 11 of the platform 15, a second bevel gear 17 secured on a lower end of the rotor 16 to rotate therewith and meshed with the first bevel gear 18, and a doll 12 secured on an upper end of the rotor 16 to rotate therewith and protruded outward from the respective slot 11 of the platform 15. Thus, when the operation rod 13 is rotated, the first bevel gear 18 is rotated by rotation of the operation rod 13 to rotate the second bevel gear 17 which rotates the rotor

16 which rotates the doll 12, so that the doll 12 is rotated as shown in Fig. 8 to simulate the hockey playing action.

However, when the doll 12 is worn out or broken, the worker has to dismantle the platform 15 so as to remove the doll 12 from the platform 15 for replacement, thereby causing inconvenience in replacement and maintenance of the doll 12. In addition, it is necessary to form slots 11 in the platform 15, thereby decreasing the aesthetic quality of the conventional hockey playing table.

### **SUMMARY OF THE INVENTION**

10 The primary objective of the present invention is to provide a hockey playing table, wherein the rotor has an upper end formed with a magnet seat, and the doll has a lower end formed with a magnet seat attracted by and moved with the magnet seat of the rotor, so that when the rotor is rotated by rotation of the operation rod, the doll is rotated by rotation of the rotor.

15 Another objective of the present invention is to provide a hockey playing table, wherein when the doll is worn out or broken, the doll can be directly replaced, thereby facilitating replacement and maintenance of the doll.

A further objective of the present invention is to provide a hockey playing table, wherein the doll is moved and rotated on the platform by attraction of the magnet seat of the rotor, so that it is unnecessary to form slots in the platform, thereby enhancing the aesthetic quality of the hockey playing table.

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In accordance with the present invention, there is provided a hockey playing table, comprising a platform, and a plurality of manipulation mechanisms mounted on the platform, wherein:

each of the manipulation mechanisms includes a connecting rack, an operation rod, a first bevel gear, a rotor, a second bevel gear, and a doll, wherein:

the connecting rack has a first side wall formed with a first insertion hole for mounting a first bearing, a second side wall formed with a through hole and a top wall formed with a second insertion hole for mounting a second bearing;

the operation rod is rotatably mounted on the connecting rack and is extended through the first bearing and the through hole of the connecting rack;

the first bevel gear is secured on the operation rod to rotate therewith;

the rotor is rotatably mounted on the connecting rack and has an upper end formed with a magnet seat;

the second bevel gear is secured on a lower end of the rotor to rotate therewith and meshes with the first bevel gear; and

the doll is rotatably mounted on the platform and is aligned with the rotor to rotate therewith, the doll has a lower end formed with a magnet seat attracted by the magnet seat of the rotor.

Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

5            Fig. 1 is a perspective view of a hockey playing table in accordance with the preferred embodiment of the present invention;

            Fig. 2 is a perspective view of a manipulation mechanism of the hockey playing table in accordance with the preferred embodiment of the present invention;

10           Fig. 3 is a partially cut-away exploded perspective view of the manipulation mechanism of the hockey playing as shown in Fig. 2;

            Fig. 3A is a bottom perspective view of a magnet seat of the manipulation mechanism of the hockey playing as shown in Fig. 3;

15           Fig. 4 is a partially cut-away plan cross-sectional view of the hockey playing table as shown in Fig. 1;

            Fig. 5 is an operational view of the manipulation mechanism of the hockey playing table as shown in Fig. 2 in use;

            Fig. 6 is a perspective view of a hockey playing table in accordance with another embodiment of the present invention;

20           Fig. 7 is a perspective view of a conventional hockey playing table in accordance with the prior art; and

Fig. 8 is a perspective view of a manipulation mechanism of the conventional hockey playing table as shown in Fig. 7.

### **DETAILED DESCRIPTION OF THE INVENTION**

Referring to the drawings and initially to Figs. 1-4, a hockey playing table 101 in accordance with the preferred embodiment of the present invention comprises a platform 105, and a plurality of manipulation mechanisms 104 mounted on the platform 105.

Each of the manipulation mechanisms 104 includes a connecting rack 40, an operation rod 30, a rotor 50, and a doll 20.

The connecting rack 40 is mounted in the platform 105. The connecting rack 40 is substantially inverted U-shaped, and has a first side wall formed with a first insertion hole 41 for mounting a first bearing 43, a second side wall formed with a through hole 42 and a top wall formed with a second insertion hole 410 for mounting a second bearing 430. The first bearing 43 is formed with a through hole 44, and the second bearing 430 is formed with a through hole 440.

The operation rod 30 is rotatably mounted on the connecting rack 40 and is extended through the through hole 44 of the first bearing 43 and the through hole 42 of the connecting rack 40. The operation rod 30 has a distal end protruding outward from the through hole 42 of the connecting rack 40, and an O-ring 35 is mounted on the distal end of the operation rod 30 and rested on the second side wall of the connecting rack 40. Preferably, the distal

end of the operation rod 30 has an outer periphery formed with a positioning hole 34, and the O-ring 35 has an inner wall formed with a positioning stub 36 inserted into the positioning hole 34 of the operation rod 30, so that the O-ring 35 is secured on the distal end of the operation rod 30. The operation rod 30 has an inner wall formed with a passage 33, and each of the manipulation mechanisms 104 further includes a fixing rack 38 secured on a bottom of the platform 105, and a support rod 37 having a first end secured on a lower end of the fixing rack 38 and a second end inserted into the passage 33 of the operation rod 30.

Each of the manipulation mechanisms 104 further includes a first bevel gear 32 secured on the operation rod 30 to rotate therewith and located in the connecting rack 40. Preferably, the operation rod 30 has an outer wall formed with an annular catch flange 31 for locking the first bevel gear 32.

The rotor 50 is rotatably mounted on the connecting rack 40 and is extended through the through hole 440 of the second bearing 430. The rotor 50 has an upper end formed with a magnet seat 51. The magnet seat 51 of the rotor 50 has an inside provided with two magnet strips 60 having different poles and has an end face provided with a plurality of rollers 61 each rested on the bottom of the platform 105 to facilitate rotation of the magnet seat 51 of the rotor 50.

Each of the manipulation mechanisms 104 further includes a second bevel gear 53 secured on a lower end of the rotor 50 to rotate therewith and

meshes with the first bevel gear 32. The second bevel gear 53 is located in the connecting rack 40. Preferably, the lower end of the rotor 50 has a periphery formed with an annular catch flange 52 for locking the second bevel gear 53.

The doll 20 is rotatably mounted on the platform 105 and is aligned  
5 with the rotor 50 to rotate therewith. The doll 20 has a lower end formed with a magnet seat 21 (see Fig. 3A) attracted by the magnet seat 51 of the rotor 50. The magnet seat 21 of the doll 20 has an inside provided with two magnet strips 600 having different poles attracted on the two magnet strips 60 of the magnet seat 51 of the rotor 50, so that the magnet seat 21 of the doll 20 is  
10 rotated with the magnet seat 51 of the rotor 50. The magnet seat 21 of the doll 20 has an end face provided with a plurality of rollers 610 each rested on the top of the platform 105 to facilitate rotation of the magnet seat 21 of the doll 20.

In operation, referring to Figs. 1-5, the magnet seat 51 of the rotor 50  
15 is rested on the bottom of the platform 105 and the magnet seat 21 of the doll 20 is rested on the top of the platform 105 as shown in Fig. 4, so that the magnet seat 21 of the doll 20 is attracted by the magnet seat 51 of the rotor 50. Thus, the magnet seat 21 of the doll 20 can be rotated with the magnet seat 51 of the rotor 50.

20 In such a manner, when the operation rod 30 is rotated, the first bevel gear 32 is rotated by rotation of the operation rod 30 to rotate the second bevel gear 53 which rotates the rotor 50 which rotates the magnet seat 51 which

rotates the magnet seat 21 of the doll 20, so that the doll 20 is rotated as shown in Fig. 5 to simulate the hockey playing action. In addition, when the operation rod 30 is moved forward and backward, the doll 20 is also moved forward and backward the operation rod 30 so as to achieve the effect of playing the hockey game.

Accordingly, the rotor 50 has an upper end formed with a magnet seat 51, and the doll 20 has a lower end formed with a magnet seat 21 attracted by and moved with the magnet seat 51 of the rotor 50, so that when the rotor 50 is rotated by rotation of the operation rod 30, the doll 20 is rotated by rotation of the rotor 50. In addition, when the doll 20 is disposed at an inclined state due to hit of the ball, the magnet seat 21 of the doll 20 and the magnet seat 51 of the rotor 50 produce an automatic restoring effect, so that the doll 20 can be returned to the original position automatically. Further, when the doll 20 is worn out or broken, the doll 20 can be directly replaced, thereby facilitating replacement and maintenance of the doll 20. Further, the doll 20 is moved and rotated on the platform 105 by attraction of the magnet seat 51 of the rotor 50, so that it is unnecessary to form slots in the platform 105, thereby enhancing the aesthetic quality of the hockey playing table 101.

Referring to Fig. 6, the doll 20 is replaced by a football doll 70.

Although the invention has been explained in relation to its preferred embodiment(s) as mentioned above, it is to be understood that many other possible modifications and variations can be made without departing from the



scope of the present invention. It is, therefore, contemplated that the appended claim or claims will cover such modifications and variations that fall within the true scope of the invention.